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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/522,294	03/09/2000	Manabu Kato	35.C14341	3313

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EXAMINER	
PHAM, HAI CHI	

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 03/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/522,294	KATO, MANABU	
	Examin r	Art Unit	
	Hai C Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *CPA (02/10/03) & Amendment (01/13/03)* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 40-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 40-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Prosecution Application

1. The request filed on 02/10/03 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/522,294 is acceptable and a CPA has been established. An action on the CPA follows.

Allowable Subject Matter

2. The indicated allowability of claims 1-11 is withdrawn in view of the newly discovered reference to Kamikubo (U.S. 6,178,029 B1). Rejections based on the newly cited reference follow.

Specification

3. The disclosure is objected to because of the following informalities:

- Page 2, line 20, "leans" should read --lens--;
- Page 24, line 1, "substrantally" should read --substantially--.

Appropriate correction is required. Applicant's cooperation in carefully reviewing the specification for detecting and subsequentially correcting any other typographical errors would greatly be appreciated.

Claim Objections

4. The following claims are objected to because of the following informalities:

Claim 56:

- Lines 2-3, "the plurality of light beam" should read --the plurality of light beams--.

Claim 57:

- Lines 2-3, "the plurality of light beam" should read --the plurality of light beams--.

Claim 58:

- Lines 2-3, "the plurality of light beam" should read --the plurality of light beams--.

Claim 59:

- Lines 2-3, "the plurality of light beam" should read --the plurality of light beams--.

Appropriate correction is required.

Duplicate Claims Warning

5. Applicant is advised that should claim **11** be found allowable, claim **56** will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Both claims 11 and 56 essentially claim the photodetector detecting each (meaning all) of the plurality of light beams and controlling the timing start of scanning of each (again meaning all) of the plurality of light beams.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 41 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "a color image forming apparatus comprising a plurality of scanning optical apparatuses along with a plurality of corresponding image carriers", does not reasonably provide enablement for "a color image forming apparatus comprising **a multibeam** scanning optical apparatus ***and*** **a plurality of image carriers**. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The specification discloses a color image forming apparatus comprising a plurality of scanning optical apparatuses, each including a [single] color light source, which separately exposes the surface of the corresponding image carrier to form an image with a different color, and the separate images of different colors being transferred on a recording medium to produce a single full color image (see specification, pages 9-11) (see also Fig.7 and related discussion in the disclosure, starting at page 22).

Claim Rejections - 35 USC § 102

8. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

10. Claim 1, 11, 40, 56 are rejected under 35 U.S.C. 102(e) as being anticipated by Kamikubo (U.S. 6,178,029 B1).

Kamikubo discloses a multi-beam scanning optical device (10, Fig. 1) comprising a light source having a plurality of light emitting sections (11 and 12), a light deflector (polygon mirror 17) for deflecting a plurality of light beams emitted respectively from the plurality of light emitting sections, a scanning optical system (f-θ lens 18) for focusing the plurality of light beams deflected by said light deflector an a surface to be scanned (19), a photodetector (beam detecting sensor 20) for controlling a timing of a start of scanning of the plurality of light beams by detecting at least one of the plurality of light beams deflected by said light deflector as at least one detection light beam, wherein the timing of the start of scanning is controlled to align the centers (P3, Fig. 3) of scanning

areas of the plurality of light beams with each other on the surface to be scanned while allowing starting points of the plurality of light beams to differ from each other when the plurality of light beams have respective wavelengths that are different from each other (see Fig. 3 and related discussions starting at col. 6).

With respect to claims 11 and 56, Kamikubo further teaches the beam detecting sensor (20) detecting each of the plurality of light beams (B_1 and B_2) and controlling the timing start of scanning of each of the plurality of light beams (Fig. 3).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 2, 8-9, 12, 18, 42, 48-49, 57-58, 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamikubo in view of Saito (U.S. 4,978,975).

Kamikubo discloses all the basic limitations of the claimed invention except for the first and second detection optical element, or a detection optical element arranged orthogonally relative to the detection light beam, the detection optical element having a refractive power in the main scanning direction.

However, Saito discloses a laser scanning apparatus including a beam detector (photodetector 11) and either a single detection optical element (8, Figs. 5-6) or a first and second detection optical elements (38 and 39, Fig. 3) for converging the deflected

light beam onto the surface of the beam detector (in the case the photodetector 11 is directly used without the optical fiber), and the detection optical element(s) having a refractive power in the main scanning direction.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the detection optical element(s) as taught by Saito in the device of Kamikubo. By doing so, the deflection beam would be properly and accurately focused on the surface of the beam detector while keeping the position of the beam detector suitable with the size of the scanning optical device as suggested by Saito.

With regard to claims 8-9, 18, 48, 55, Kamikubo also discloses the scanning optical device including an incident optical system formed by a first lens collimating (collimator lenses 13, 14) and a second lens for focusing (cylindrical lens 16).

With respect to claim 49, Kamikubo teaches the beam detector (20) in conjugate relation with the surface to be scanned (19, Fig. 1).

With respect to claims 60-62, Kamikubo further teaches the laser diodes (11 and 12) having different wavelengths.

13. Alternatively, claims 2, 4, 8-9, 12, 14, 18, 42, 44, 48-49, 51, 55, 57-58, 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamikubo in view of Nishiyama (U.S. 5,606,449).

Kamikubo discloses all the basic limitations of the claimed invention except for the first and second detection optical element, or a detection optical element arranged

orthogonally relative to the detection light beam, the detection optical element having a refractive power in the main scanning direction, and the detection optical element being of plastic.

However, Nishiyama discloses an optical scanning device including a beam detector (light receiving element 12) and a detection optical element (20) composed of a first and second detection optical elements (20a and 20b) for converging the deflected light beam onto the surface of the beam detector, and the detection optical element(s) having a refractive power in the main scanning direction and being made of resin.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the detection optical element(s) as taught by Nishiyama in the device of Kamikubo. By doing so, the deflection beam would be properly and accurately focused on the surface of the beam detector.

With regard to claims 8-9, 18, 48, 55, Kamikubo also discloses the scanning optical device including an incident optical system formed by a first lens collimating (collimator lenses 13, 14) and a second lens for focusing (cylindrical lens 16).

With respect to claim 49, Kamikubo teaches the beam detector (20) in conjugate relation with the surface to be scanned (19, Fig. 1).

With respect to claims 60-62, Kamikubo further teaches the laser diodes (11 and 12) having different wavelengths.

14. Alternatively, claims 2-3, 8-9, 12-13, 18, 42-43, 48-50, 55, 57-58, 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamikubo in view of Saito, as applied to claims 1-2, 12, 42, 49 above, and further in view of Kato (U.S. 5,963,356).

Kamikubo discloses all the basic limitations of the claimed invention except for the first and second detection optical element, or a detection optical element arranged orthogonally relative to the detection light beam, the detection optical element having a refractive power in the main scanning direction, and the detection optical element being an anamorphic lens.

Kato, an acknowledged prior art, discloses a scanning optical apparatus comprising a light source (1), a light deflector (5) for deflecting the light beam emitted from the light source, a scanning optical system (6) for focusing the light beam deflected by the light deflector on a surface to be scanned (photosensitive drum), a first detection optical element (42) for converging the light beam deflected by the light deflector, a second detection optical element (92) for focusing the detection light beam converged by the first detection optical element, a photodetector (9) for controlling a time of a start of scanning of the light beam by detecting the detection light beam, the first detection optical element having its optical surfaces arranged orthogonally relative to an arrangement direction of the detection light beam (Fig. 2). With regard to claim 42, Kato further teaches the detection optical element (42) having a refractive power in the main scanning direction (the refractive power in the main scanning direction of the lens 42 is different form its refractive power in the sub-scanning direction). Kato further teaches the first detection optical element comprising an anamorphic lens.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the detection optical element(s) as taught by Kato in the device of Kamikubo. By doing so, the deflection beam would be properly and accurately focused on the surface of the beam detector.

15. Claims 5, 15, 45, 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamikubo ('029) in view of Saito, as applied to claims 1-2, 12, 42, 49 above, and further in view of Kamikubo (U.S. 6,124,962).

Kamikubo ('029), as modified by Saito, discloses all the basic limitations of the claimed invention except for the scanning optical system comprising a refraction optical element and a diffraction optical element.

However, Kamikubo ('962) discloses a scanning optical system whose scanning lenses comprise refraction lens elements with a diffraction lens structure for compensating compensates for the lateral chromatic aberration caused by the refraction lens elements.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the scanning device of Kamikubo ('029), as modified by Saito, by incorporating the refraction and diffraction lens elements as taught by Kamikubo ('962) Doing so would eliminate the chromatic aberration when a light source emitting a plurality of light beams of different wavelengths are used.

16. Claims 6-7, 16-18, 46-47, 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamikubo ('029) in view of Saito and Kamikubo ('962), as applied to claims 12, 15, 41, and 45 above, and further in view of Kanoto et al. (U.S. 5,365,259).

Kamikubo ('029), as modified by Saito and Kamikubo ('962), discloses all the basic limitations of the claimed invention except for the detection optical element and the scanning lens being integrally formed and being both made of a plastic material.

However, Kanoto et al. discloses a scanning optical device comprising a detection optical element (24c, Fig. 7) for converging the deflected laser beam toward the start of scan photosensor (11), the detection lens being disposed orthogonally relative to the deflected laser beam, and being integral to the scanning lens (24), both being made of a plastic material.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Kamikubo ('029), as modified by Saito and Kamikubo ('962), with the aforementioned teaching of Kanoto et al. By doing so, it is possible to provide a light and compact optical scanning device.

Response to Arguments

17. Applicant's arguments with respect to claims 1-62 have been considered but are moot in view of the new grounds of rejection presented in this Office action.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

HAI PHAM
PRIMARY EXAMINER
March 13, 2003